



Chapter 3

Practice Test 1

Reading Test

55 MINUTES, 42 QUESTIONS

Turn to Section 1 of your answer sheet to answer the questions in this section.

DIRECTIONS

Each passage or pair of passages below is followed by a number of questions. After reading each passage or pair, choose the best answer to each question based on what is stated or implied in the passage or passages and in any accompanying graphics (such as a table or graph).

Questions 1-8 are based on the following passage.

Excerpts from *The Kite Runner* by Khaled Hosseini, ©2003 by TKR Publications, LLC. Used by permission of Riverhead, an imprint of Penguin Publishing Group, a division of Penguin Random House, LLC. All rights reserved.

The kite-fighting tournament was an old winter tradition in Afghanistan. It started early in the morning on the day of the contest and didn't end until only the winning kite flew in the sky – I remember one year the tournament outlasted daylight. People gathered on sidewalks and roofs to cheer for their kids. The streets filled with kite fighters, jerking and tugging on their lines, squinting up to the sky, trying to gain position to cut the opponent's line. Every kite fighter had an assistant – in my case, Hassan – who held the spool and fed the line...

Over the years, I had seen a lot of guys run kites. But Hassan was by far the greatest kite runner I'd ever seen. It was downright eerie the way he always got to the spot the kite would land *before* the kite did, as if he had some sort of inner compass.

I remember one overcast winter day, Hassan and I were running a kite. I was chasing him through neighborhoods, hopping gutters, weaving through narrow streets. I was a year older than him, but Hassan ran faster than I did, and I was falling behind. "Hassan! Wait!" I yelled, my breathing hot and ragged.

He whirled around, motioned with his hand. "This way!" he called before dashing around another corner. I looked up, saw that the direction we were running was opposite to the one the kite was drifting.

"We're losing it! We're going the wrong way!" I cried out.

"Trust me!" I heard him call up ahead. I reached the corner and saw Hassan bolting along, his head down, not even looking at the sky, sweat soaking through the back of his shirt. I tripped over a rock and fell – I wasn't just slower than Hassan but clumsier too; I'd always envied his natural athleticism. When I staggered to my feet, I caught a glimpse of Hassan disappearing around another street corner. I hobbled after him, spikes of pain battering my scraped knees.

I saw we had ended up on a rutted dirt road near Isteqlal Middle School. There was a field on one side where lettuce grew in the summer, and a row of sour cherry trees on the other. I found Hassan sitting cross-legged at the foot of one of the trees, eating from a fistful of dried mulberries.

"What are we doing here?" I panted, my stomach roiling with nausea.

He smiled. "Sit with me, Amir agha."

I dropped next to him, lay on a thin patch of snow, wheezing. "You're wasting our time. It was going the other way, didn't you see?"

Hassan popped a mulberry in his mouth. "It's coming," he said. I could hardly breathe and he didn't even sound tired. "How do you know?" I said.

"I know..."

"Here it comes," Hassan said, pointing to the sky. He rose to his feet and walked a few paces to his left. I looked up, saw the kite plummeting toward us. I heard footfalls, shouts, an approaching melee of kite runners.

CONTINUE

But they were wasting their time. Because Hassan stood with his arms wide open, smiling, waiting for the
 60 kite. And may God – if He exists, that is – strike me blind if the kite didn’t just drop into his outstretched arms.

1

Which choice best describes a main theme of the passage?

- A) Trusting a friend may be wise, even when it goes against reason.
- B) Victory comes from hard work.
- C) Competition brings out the best in each competitor.
- D) It is best to be cautious when the outcome is uncertain.

2

The author includes the second paragraph (lines 12–16) most likely to

- A) provide background on the characters by recounting how Hassan became a skilled kite runner.
- B) create a sense of anticipation by emphasizing the history of competitiveness between Hassan and the narrator.
- C) introduce the relationship between the characters described in the passage by emphasizing the narrator’s impression of Hassan’s skill.
- D) provide context for the story by describing the time period during which the events take place.

3

Which choice best supports the narrator’s description of Hassan as “the greatest kite runner I’d ever seen” (lines 13–14)?

- A) Line 12 (“Over the...kites”)
- B) Lines 14–16 (“It was...compass”)
- C) Line 21 (“I was...behind”)
- D) Lines 56–57 (“I heard...runners”)

4

As used in line 16, “inner compass” most strongly suggests that Hassan

- A) has a natural gift for kite running.
- B) is able to navigate in a strange city.
- C) is guided by his strong morals.
- D) is cheating at the kite-fighting competition.

5

As used in line 22, “ragged” most nearly means

- A) fast.
- B) loud.
- C) rough.
- D) fevered.

6

After Hassan and the narrator reach the middle school, Hassan’s actions suggest that he

- A) is upset that the narrator found him.
- B) is confident that he will catch the kite.
- C) sits down to let the narrator catch up with him.
- D) ran the wrong way to let the narrator catch the kite.

7

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 9–11 (“Every kite...line”)
- B) Lines 47–48 (“I dropped...wheezing”)
- C) Lines 48–49 (“You’re wasting...see”)
- D) Lines 50–51 (“Hassan popped...said”)

8

According to the passage, while the kite is falling, there is a sound of

- A) wind whipping the kite’s fabric.
- B) Hassan calling out to the narrator.
- C) the group of competitors coming closer.
- D) parents cheering for their children.

CONTINUE

Questions 9-16 are based on the following passage and supplementary material.

This passage is adapted from Elaina Zachos, "Can Pokémon Go Get Players Into National Parks?" ©2016 by *National Geographic*. In the game "Pokémon Go," players use mobile devices to find and catch characters with names such as "Charmander" and "Pikachu." The game uses GPS and augmented reality to make the characters appear as if they are in the player's real-world location.

They walk among us. Shuffling along sidewalks, mesmerized by the smartphones cradled in their hands. Some have earbuds in, seemingly oblivious to the physical world around them. They are Pokémon
 5 Go players, and they are on one mission: They've gotta catch 'em all. From teenage girls to police officers, it seems like everyone is hopping on the augmented reality bandwagon to hunt down their first Charmanders, Squirtles, and Bulbasaur. Recently
 10 ranked as the most popular game in U.S. history, the phenomenon has made its way through civilization and is now venturing into uncharted territory: national parks.

With lush trees and mountain ranges, national
 15 parks are not the easiest places to find cell reception or Wi-Fi. Because of this, Barb Maynes, public information officer at Olympic National Park, says she hasn't heard reports of people playing Pokémon Go. Acadia National Park also hasn't reported any
 20 activity. But some visitors centers, which have Wi-Fi, double as pokégym, or places where players can battle each other and level up. On Tuesday, Tim Rains, a public affairs specialist at Glacier National Park, caught his first Pokémon—a Bulbasaur—near Glacier's Apgar
 25 Visitor Center. Lynda Doucette, a lead interpretive ranger at Great Smoky Mountains National Park, says the park's landscape obstructs cell service. But she and her colleagues have found at least five Pokéstops, landmarks where players can collect useful items, and
 30 a Pokégym. They've identified at least 12 Pokémon, including Zubats and Squirtles.

"One of our goals as part of the National Park Service Centennial is to connect with and create the next generation of park visitors, supporters, and
 35 advocates," Rains writes in an email. "Games that use geolocation are a new and emerging opportunity to bring new audiences to the park."

Pokémon Go also has an educational component to it. Great Smoky Mountains's Mountain Farm

40 Museum has three Pokéstops. When found, historical text will pop up on screen, and players can tap an icon to learn more before returning to the game. There's also a Twitter account called Pokémon Archaeology devoted to recording Pokémon in
 45 historical settings. "It gets people out there," Doucette says. "I think it's an opportunity to bring a new audience to a site."

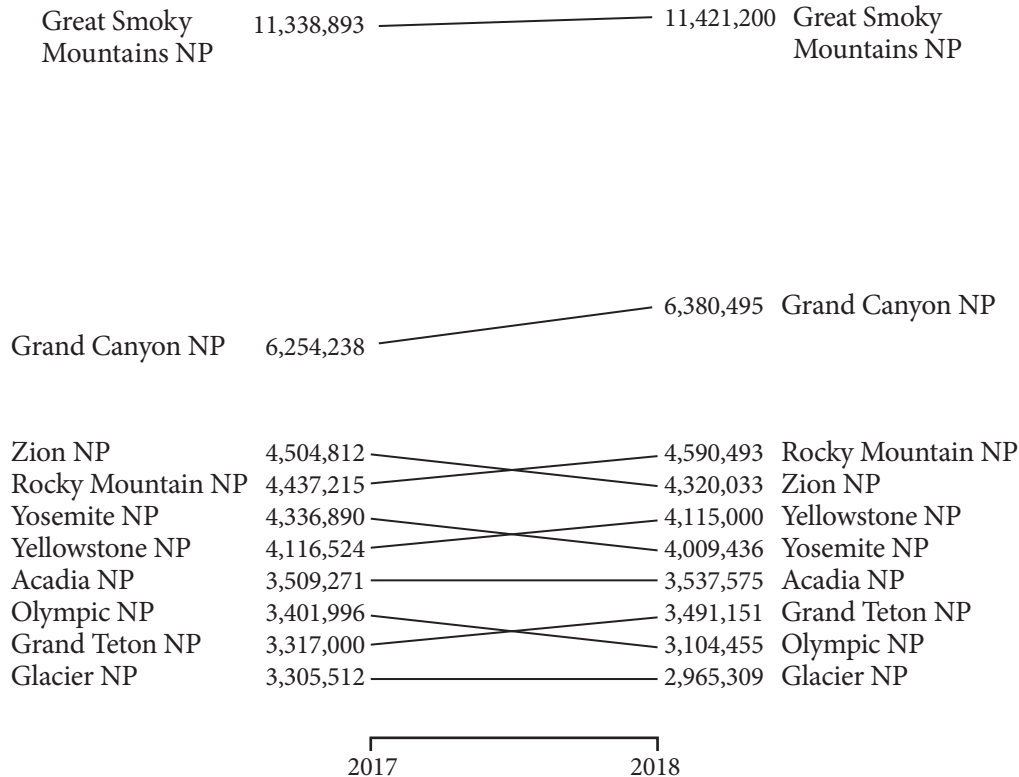
But as play increases, injuries abound. Already, players have been hurt after falling or walking into
 50 obstacles while cruising for critters. So far, though, national parks aren't implementing any policies against the game. Instead, Emily Davis, a public affairs officer at Grand Canyon National Park, says rangers will continue to remind visitors to be aware of their
 55 surroundings on their quests to track down new Pokémon. "I don't anticipate that we're going to have any new rules implemented," Doucette says. "It's the same safety concerns we've had before this game."

Overall, Pokémon Go may become a new way to
 60 explore historic parks, which tend to be dead spots for technology. In Washington, D.C., rangers will even soon be getting in on the game by leading a "Catch the Mall Pokémon Hunt," according to the National Mall and Memorial Parks Facebook page.
 65 "On top of reminding visitors to be safe during their visit, we are also asking them to be respectful of the solemn monuments and to avoid wandering into off-limits areas," Tom Crosson, chief of public affairs for the National Park Service, writes in an email.

70 Who knows? Maybe Pikachu could end up on Mount Rushmore one day.

CONTINUE

**Top 10 National Parks, Recreation Visits
2017 to 2018**



9

The main idea of the passage is that

- A) national park rangers are concerned about possible injuries due to Pokémon Go.
- B) visitors to national parks are discouraged by the lack of Wi-Fi and other technology.
- C) people who play Pokémon Go are more likely to visit national parks.
- D) Pokémon Go may encourage players to explore and learn about national parks.

10

As used in line 33, “create” most nearly means

- A) design.
- B) birth.
- C) foster.
- D) help.

11

As used in line 36, “emerging” most nearly means

- A) developing.
- B) appearing.
- C) becoming.
- D) unexpected.

12

The author uses the example in lines 39–42 (“Great Smoky . . . game”) mainly to support the assertion that Pokémon Go

- A) requires parks to increase safety measures to protect visitors from injury.
- B) can inform Pokémon Go players about the national parks.
- C) was created for the National Park Service Centennial.
- D) was demanded by an increasing number of visitors to the park.

CONTINUE

13

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 32–35 (“One of . . . email”)
- B) Lines 35–37 (“Games that . . . park”)
- C) Lines 38–39 (“Pokémon Go . . . it”)
- D) Lines 50–56 (“So far . . . Pokémon”)

14

In the passage, Lynda Doucette indicates that

- A) Pokémon Go players in national parks do not raise unique safety concerns.
- B) Pokémon Go players ignore animals and natural features.
- C) new visitors to national parks will mainly be Pokémon Go players.
- D) Pokémon Go players may injure themselves and other national park visitors.

15

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 25–30 (“Lynda Doucette . . . Pokégym”)
- B) Lines 45–47 (“It gets . . . site”)
- C) Lines 48–50 (“But as . . . critters”)
- D) Lines 56–58 (“I don’t . . . game”)

16

According to the graph, in 2018, there were more visits to Olympic National Park than to

- A) Zion National Park.
- B) Yellowstone National Park.
- C) Glacier National Park.
- D) Grand Canyon National Park.

CONTINUE 

Questions 17-25 are based on the following passage and supplementary material.

This passage is adapted from Adel Heenan, Andrew S. Hoey, Gareth J. Williams, and Ivor D. Williams, "Understanding the conditions that foster coral reefs' caretaker fish," originally published in 2016 by *The Conversation*: <https://theconversation.com/>.

Coral reefs are among the most valuable natural assets on Earth. They provide an estimated US\$375 billion worth of goods and services every year, such as supporting fisheries and protecting coasts. But reefs face many stresses and shocks, from local threats like overfishing, habitat damage and pollution to the global impacts of climate change. Many scientists are working to identify management strategies that can effectively buffer reefs against the array of threats that challenge them.

Herbivorous fish (species that eat plants) are critical for healthy coral reefs because they help to regulate the constant competition for space between corals and seaweeds. Hard corals and other reef-building organisms form hard skeletons out of calcium carbonate, while fleshy organisms such as seaweeds and algal turfs (thick mats of short algae) grow on the surfaces of these hard structures. By feeding on seaweeds and algal turfs, herbivorous fish prevent these organisms from smothering reefs.

Recent studies have stressed the importance for coral reef conservation of protecting herbivorous fish, which are heavily fished in many parts of the world. But in a new study, we found that populations of herbivorous fish vary widely from site to site, and are strongly influenced by factors including temperature and island type. This means that strategies to protect these important species may not work unless they take local conditions into account, and no single strategy is likely to work everywhere.

Fishing has caused widespread reductions in herbivorous fish populations on coral reefs around the world. Because fishing has had such pervasive global effects, it is hard to separate human impacts from the natural biophysical and environmental drivers of these fish populations.

But we need to make this distinction if we want to understand why herbivores might be naturally more prevalent in some places than others, and to measure true human-related depletion effects accurately. More

specifically, in this study we wanted to know whether it was reasonable to expect the same amount of these fishes in areas where environmental conditions are very different.

All herbivorous fish are not equal. Depending on what they eat, they perform different roles that contribute to the functioning of coral reefs, much in the same way that lawn mowers and hedge trimmers perform different tasks in your garden. To understand how these fishes differ in their response to the environment, we classified fishes in our study based on their functional roles, defined by what they eat and how they eat it.

For example, browsers eat fleshy seaweeds; detritivores comb algal turfs, feeding on a variety of fine plant and animal matter; and scrapers and excavators scrape hard surfaces on the reef, clearing space for corals to colonize. Large excavators, such as big parrotfish, are considered to be particularly important.

Since the groups of herbivores we studied play different functional roles on reefs, healthy reefs are likely to need diverse populations of grazing fishes. Browsers and large parrotfish are most sensitive to human impacts, so our results suggest that we may need new strategies to protect these species.

Our findings also show that a coral reef's environmental setting strongly influences the number and diversity of herbivorous caretaker species that it can support. For instance, browsers that feed directly on macroalgae are naturally increased in cooler locations, while detritivores that selectively remove detritus from algal turfs (thus keeping the turfs clean) have increased population sizes in warmer areas.

Agencies that manage coral reefs are increasingly turning to local-scale interventions to help make these sensitive ecosystems more sustainable. Some may adopt policies that focus on herbivores, such as the marine reserve on the Hawaiian island of Maui where herbivores, but not other species, are protected from fishing. Our results show that it is important to treat herbivores as a diverse group with different roles and vulnerabilities, and to think about the environmental context as we design strategies to protect them.

CONTINUE

Figure 1

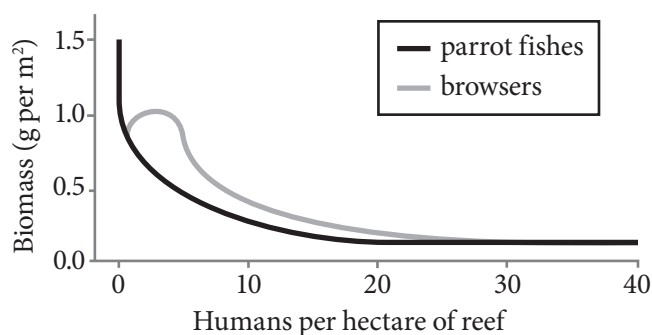
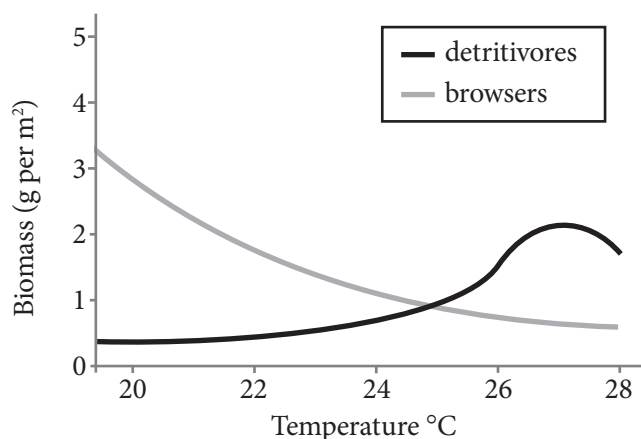


Figure 2



17

Which statement best describes the overall structure of the passage?

- A) The authors outline various types of herbivorous fish, and then explain how they interact together.
- B) The authors trace the history of research on herbivorous fish, and then explain the impact of that research.
- C) The authors describe an event that occurs on coral reefs, and then explain what caused the event.
- D) The authors explain the relationship between coral reefs and herbivorous fish, and then detail a study's findings about that relationship.

18

Based on the passage, the authors' perspective on studying coral reefs is that it is

- A) confusing to find varying amounts of seaweed and algal turf in reefs.
- B) difficult to understand why the fish populations varied in different reefs.
- C) important to protect a valuable resource.
- D) controversial to study human effects on the reefs.

19

As used in line 5, "shocks" most nearly means

- A) surprises.
- B) jolts.
- C) disturbances.
- D) reactions.

20

According to the passage, conservation efforts should take local conditions into account because populations of herbivorous fish

- A) are affected by competing species.
- B) are influenced by their habitats.
- C) are not influenced by water temperature.
- D) do not protect other important species.

21

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 21–23 ("Recent studies...world")
- B) Lines 24–27 ("But in a new...type")
- C) Lines 27–30 ("This means...everywhere")
- D) Lines 33–36 ("Because fishing...populations")

CONTINUE

22

What does the authors' use of the word "drivers" (line 35) suggest about the fish population?

- A) Human and natural factors affect the fish population.
- B) The feeding habits of fish are influenced by multiple factors.
- C) Fishing has forced fish populations to move to new locations around the globe.
- D) Fish populations have not changed significantly in response to human activity.

23

Which choice best supports the conclusion that different types of herbivorous fish perform different roles in the reef environment?

- A) Lines 40–44 ("More specifically...different")
- B) Line 45 ("All herbivorous...equal")
- C) Lines 54–58 ("For example...colonize")
- D) Lines 58–60 ("Large excavators...important")

24

Based on the graphs, which of the following groups includes the greatest biomass of herbivorous fish?

- A) Detritivores when the water temperature is 28 degrees Celsius
- B) Parrotfishes when there are 0 humans per hectare of reef
- C) Browsers and parrotfishes when there are 40 humans per hectare of reef
- D) Browsers when the water temperature is 20 degrees Celsius

25

Which idea from the passage is supported by the information in the graphs?

- A) Herbivorous fish eat different types of seaweed.
- B) Certain types of herbivorous fish are affected by the presence of humans.
- C) Herbivorous fish perform different functional roles in coral reefs.
- D) Conservation of herbivorous fish has increased their populations.

CONTINUE 

Questions 26-34 are based on the following passage.

This passage is adapted from the speech "The Noble Mansion of Free India" from *The Penguin Book of Twentieth-Century Speeches* edited by Brian MacArthur, Copyright ©1992 by Brian MacArthur. Used by permission of Viking Books, an imprint of Penguin Publishing Group, a division of Penguin Random House LLC. All rights reserved. The speech was given by Jawaharlal Nehru, the first Prime Minister of India, to the members of India's first Parliament on August 14, 1947, when India was about to become independent from the United Kingdom.

At the dawn of history India started on her unending quest, and trackless centuries are filled with her striving and the grandeur of her success and her failures. Through good and ill fortune alike
 5 she has never lost sight of that quest or forgotten the ideals which gave her strength. We end today a period of ill fortune and India discovers herself again. The achievement we celebrate today is but a step, an opening of opportunity, to the greater triumphs and
 10 achievements that await us. Are we brave enough and wise enough to grasp this opportunity and accept the challenge of the future?

Freedom and power bring responsibility. The responsibility rests upon this Assembly, a sovereign
 15 body representing the sovereign people of India. Before the birth of freedom we have endured all the pains of labour and our hearts are heavy with the memory of this sorrow. Some of those pains continue even now. Nevertheless, the past is over and it is the
 20 future that beckons to us now.

That future is not one of ease or resting but of incessant striving so that we may fulfill the pledges we have so often taken and the one we shall take today. The service of India means the service of the millions
 25 who suffer. It means the ending of poverty and ignorance and disease and inequality of opportunity. The ambition of the greatest man of our generation has been to wipe every tear from every eye. That may be beyond us, but as long as there are tears and suffering,
 30 so long our work will not be over.

And so we have to labour and to work, and work hard, to give reality to our dreams. Those dreams are for India, but they are also for the world, for all the nations and peoples are too closely knit together today
 35 for any one of them to imagine that it can live apart. Peace has been said to be indivisible; so is freedom, so is prosperity now, and so also is disaster in this

One World that can no longer be split into isolated fragments.

40 It is a fateful moment for us in India, for all Asia and for the world. A new star rises, the star of freedom in the East, a new hope comes into being, a vision long cherished materializes. May the star never set and that hope never be betrayed! We rejoice in that freedom,
 45 even though clouds surround us, and many of our people are sorrow stricken and difficult problems encompass us. But freedom brings responsibilities and burdens and we have to face them in the spirit of a free and disciplined people.

50 The future beckons to us. Whither do we go and what shall be our endeavour? To bring freedom and opportunity to the common man, to the peasants and workers of India; to fight and end poverty and ignorance and disease; to build up a prosperous,
 55 democratic and progressive nation, and to create social, economic and political institutions which will ensure justice and fullness of life to every man and woman.

We have hard work ahead. There is no resting for
 60 any one of us till we redeem our pledge in full, till we make all the people of India what destiny intended them to be. We are citizens of a great country on the verge of bold advance, and we have to live up to that high standard. All of us, to whatever religion we may
 65 belong, are equally the children of India with equal rights, privileges and obligations. We cannot encourage communalism or narrow-mindedness, for no nation can be great whose people are narrow in thought or in action.

70 To the nations and peoples of the world we send greetings and pledge ourselves to cooperate with them in furthering peace, freedom and democracy. And to India, our much-loved motherland, the ancient, the eternal and the ever-new, we pay our reverent homage
 75 and we bind ourselves afresh to her service.

CONTINUE

26

The main purpose of the passage is to

- A) inspire the Assembly to work diligently to help India prosper.
- B) persuade Indian citizens to take advantage of new opportunities.
- C) comfort those who lost a great deal in the fight for independence.
- D) seek advice from the Assembly about India's next steps.

27

Which choice best summarizes the passage?

- A) The common people of India suffered many hardships to gain freedom, and they must organize to achieve true equality.
- B) The nations of the world have prospered and failed together throughout history.
- C) The citizens of India will be sorrowful and burdened until they realize their dreams.
- D) Gaining independence is a great accomplishment, but India's leaders must dedicate themselves to help the country achieve its full potential.

28

Nehru includes the statement in lines 4–6 (“Through good...strength”) most likely to convey the idea that

- A) India's people have been true to their values even during times of hardship.
- B) India's quest will succeed even though the past has been difficult.
- C) India has been led by people with strong ideals throughout history.
- D) the people of India must honor their nation's values no matter the circumstances.

29

Nehru's purpose for using the words “birth” and “pains” in lines 16–17 is most likely to

- A) admit that sorrowful memories will continue even in happier times.
- B) support the argument that the new era of freedom will be joyful.
- C) compare the heavy labor of the past with the easy road ahead.
- D) imply that something positive came from a difficult experience.

30

Nehru implies that for India to succeed, the members of Parliament must

- A) accept what fate may have in store for the country.
- B) celebrate both India's past and future steps toward success.
- C) work continually to fulfill their obligations to India's people.
- D) encourage the common people to keep their promises to each other.

31

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 8–10 (“The achievement...us”)
- B) Lines 21–23 (“That future...today”)
- C) Lines 40–41 (“It is...world”)
- D) Lines 70–72 (“To the...democracy”)

CONTINUE 

32

Based on the passage, which choice most closely describes Nehru's perspective on opportunity?

- A) Once freedom is achieved, there is no need to work for greater economic opportunity.
- B) Opportunities for personal prosperity must be balanced with opportunities for national prosperity.
- C) A responsible government works to bring about equal opportunity for all its people.
- D) Equal economic opportunity is not as essential as religious equality.

33

As used in line 68, "narrow" most nearly means

- A) thin.
- B) fine.
- C) limited.
- D) tight.

34

Which of the following does Nehru suggest is most important to ensure that India reaches its potential?

- A) Evaluating good and ill fortune
- B) Honoring and serving India
- C) Remembering forgotten ideals
- D) Seeking advice from other nations

CONTINUE 

measurement of a neutrino's mass — or to narrow the
85 range of the estimate as far as the machine's sensitivity
will allow. Cosmological observations suggest that the
mass of neutrinos could be 0.1 eV or lighter.

35

Based on Passage 1, what can be reasonably inferred about neutrinos?

- A) A person holding one would not be able to feel its weight.
- B) They have surprised scientists more than any other particle has.
- C) They provide a direct measurement of the mass of the early universe.
- D) Calculating their size helps determine the charge of other particles.

36

Which choice from Passage 1 provides the best evidence for the answer to the previous question?

- A) Lines 3–5 (“They were...mass”)
- B) Lines 14–19 (“The analysis...electron”)
- C) Lines 33–35 (“By carefully...neutrino”)
- D) Lines 40–44 (“Only by...better”)

37

The author uses the word “weirdest” in line 1 most likely to

- A) point out problems with previous observations.
- B) indicate that neutrinos can be puzzling.
- C) suggest the unusual nature of recent experiments.
- D) describe previous observations as awkward.

38

As used in line 42, “robust” most nearly means

- A) exact.
- B) healthy.
- C) reliable.
- D) vigorous.

39

The last paragraph of Passage 2 serves mainly to

- A) support the claim that scientists have studied particles for many years.
- B) explain the methods scientists will use to measure neutrinos.
- C) celebrate the researchers’ achievements.
- D) describe future research possibilities.

40

What main purpose do Passages 1 and 2 share?

- A) To share discoveries about one type of particle
- B) To describe how researchers develop new measurement tools
- C) To summarize what physicists have learned about subatomic particles
- D) To persuade scientists to make more accurate measurements

CONTINUE

41

The authors of Passage 1 and Passage 2 would most likely agree that

- A) researchers have not given neutrinos as much attention as they deserve.
- B) indirect measurements will replace direct observation in scientific study.
- C) any valuable discovery raises more questions than it answers.
- D) subatomic particles do not always keep the same form.

42

Which choice from Passage 2 provides the best evidence for the answer to the previous question?

- A) Lines 55–59 (“An experiment...mass”)
- B) Lines 63–65 (“This measurement...eV”)
- C) Lines 72–73 (“During this...neutrino”)
- D) Line 74 (“KATRIN cannot...directly”)

STOP

**If you finish before time is called, you may check your work on this section only.
Do not turn to any other section.**

Writing and Language Test

30 MINUTES, 40 QUESTIONS

Turn to Section 2 of your answer sheet to answer the questions in this section.

DIRECTIONS

Each passage below is accompanied by a number of questions. For some questions, you will consider how the passage might be revised to improve the expression of ideas. For other questions, you will consider how the passage might be edited to correct errors in sentence structure, usage, or punctuation. A passage or a question may be accompanied by one or more graphics (such as a table or graph) that you will consider as you make revising and editing decisions.

Some questions will direct you to an underlined portion of a passage. Other questions will direct you to a location in a passage or ask you to think about the passage as a whole.

After reading each passage, choose the answer to each question that most effectively improves the quality of writing in the passage or that makes the passage conform to the conventions of standard written English. Many questions include a “NO CHANGE” option. Choose that option if you think the best choice is to leave the relevant portion of the passage as it is.

Questions 1-10 are based on the following passage.

Expanding Europe’s Understanding

In 1295, Italian explorer and trader Marco Polo returned to his home of Venice after 24 years of travel along the Silk Road to China. He brought with him precious gems—such as **1** diamonds, rubies, and, sapphires—as well as a Chinese navigation device: the compass. Polo also **2** carried, alongside the diamonds, rubies, sapphires, and compass, knowledge

1

- A) NO CHANGE
- B) diamonds, rubies, and
- C) diamonds; rubies and
- D) diamonds, rubies; and

2

- A) NO CHANGE
- B) carried in addition to the diamonds, rubies, sapphires, and compass
- C) carried
- D) carried, aside from the diamonds, rubies, sapphires, and compass,

CONTINUE

he had **3** gained; from his journey east. He introduced the ideas of paper currency and burning coal for heat, and he showed Europeans that their societies were not the only advanced civilizations. **4**

Polo, along with his father and uncle, had set out to deliver items to China, a journey that took them over three years to complete. Upon arriving in China, Polo became appointed as a diplomat to assist the ruler Kublai Khan. In this **5** role as a diplomat, Polo traveled extensively in the Chinese empire and throughout Asia. He encountered

3

- A) NO CHANGE
- B) gained. From
- C) gained from
- D) gained, it was from

4

At this point, the writer is considering adding the following sentence.

Europeans considered themselves advanced because of the technologies they used, though some had been invented elsewhere.

Should the writer make this addition here?

- A) Yes, because it helps show how influential Marco Polo was.
- B) Yes, because it provides information that supports what was previously stated about advanced civilizations.
- C) No, because it interrupts the discussion of Marco Polo's journey with a largely unrelated detail.
- D) No, because it contains information that was previously stated.

5

- A) NO CHANGE
- B) life,
- C) life as a diplomat,
- D) role,

CONTINUE

many things that were unknown in **6** Europe.

[1] After returning to Venice with his fortune in gemstones, Polo dictated a detailed tale of his travels to a writer. [2] His book, *The Travels of Marco Polo*, spread across Europe over the next century. [3] Polo's explanation of paper money, which was very different from the European monetary system, relying on heavy gold and silver, **7** was new and intriguing. [4] The geographic information he provided eventually led to the creation of the Fra Mauro map, one of the most significant historical maps and the most accurate at the time. [5] Polo's book also detailed the paper currency used in the East, which he considered to be a superior system. **8**

6

The writer is considering revising the underlined portion to the following.

Europe, including animals, monetary systems, and technologies.

Should the writer make this revision?

- A) Yes, because it gives details that further explain Marco Polo's everyday life in Asia.
- B) Yes, because it provides additional relevant information about what Marco Polo learned in his travels.
- C) No, because it doesn't fully explain how he communicated with people in Asia.
- D) No, because it provides information that is not related to the paragraph's focus on Kublai Khan.

7

- A) NO CHANGE
- B) were
- C) is
- D) are

8

To make this paragraph most logical, sentence 3 should be placed

- A) where it is now.
- B) after sentence 1.
- C) after sentence 4.
- D) after sentence 5.

CONTINUE 

In addition to these specific effects, Polo's travels also inspired other people to explore the world. The curiosity spurred by his tales contributed to the Age of Discovery, a period of European history that involved significant overseas exploration.

9 The original manuscripts of Polo's book are now lost, but approximately 150 copies in different languages still exist. Because these manuscripts were written before the invention of the printing press, the versions all have significant differences. While it may never be known exactly what Polo's original manuscript said, his influence lives on in many areas, **10** including cartography, currency, and exploration.

9

Which sentence, if added here, would most effectively introduce the topic of the paragraph?

- A) Christopher Columbus was famously influenced by Polo's travels.
- B) The Age of Discovery led to greater geographic understanding but also increased conflict.
- C) Some historians have questioned the accuracy of certain details in Polo's book.
- D) Sadly, a complete and accurate account of Polo's tales no longer exists.

10

- A) NO CHANGE
- B) including—
- C) including:
- D) including;

CONTINUE 

Questions 11-20 are based on the following passage.

Crabs Can Navigate

Research has shown that both terrestrial and aquatic animals practice spatial **11** learning, and the ability to navigate a physical environment. Biologists study spatial learning to understand how animals find their way around familiar territory. **12** A team of scientists at Swansea University is hoping to learn more about the spatial learning abilities of both terrestrial and aquatic animals.

Dr. Edward Pope, a marine biologist at Swansea University, said that the new study “is important because we know that insects, especially ants and bees, have some impressive mental abilities but we haven’t really looked for them in their aquatic counterparts.” The results of the study shed light on how members of an aquatic species navigate **13** they’re underwater environment to find things like food. **14**

11

- A) NO CHANGE
- B) learning. The
- C) learning the
- D) learning—the

12

Which sentence provides the best transition to the next paragraph?

- A) NO CHANGE
- B) A team of scientists at Swansea University wants to research the spatial learning abilities of many different aquatic species to better understand spatial learning in shore crabs.
- C) A team of scientists at Swansea University recently published a study that assessed the spatial learning abilities of the shore crab, an aquatic creature.
- D) A team of scientists at Swansea University is researching why shore crabs need spatial learning abilities to find their way around a physical environment.

13

- A) NO CHANGE
- B) they are
- C) their
- D) there

14

The writer is considering revising the paragraph to remove the quotation from Pope. Assuming that the revision would result in a complete sentence, should the quotation be kept or deleted?

- A) Kept, because it gives a reason that Pope and his team wanted to study shore crabs.
- B) Kept, because it provides necessary details about the scientific approach to Pope’s study.
- C) Deleted, because it does not contribute to the paragraph’s focus on the importance of studying spatial learning abilities in aquatic animals.
- D) Deleted, because it gives an unnecessary fact that obscures the paragraph’s focus.

CONTINUE

According to Pope, shore crabs frequently navigate complex environments. This fact led him to suspect that the **15** crabs may have complex spatial learning abilities. In order to prove this theory, Pope and his colleagues put a group of shore crabs to the test.

[1] At the end of this period, scientists had observed a decrease in both the time it took each of the 12 crabs to complete the maze and the number of wrong turns each crab took. [2] The team taught 12 shore crabs to navigate an underwater maze, which contained several false paths to the end and one true path. [3] Over a four-week period, scientists placed food only at the end of the true path to reward those crabs that successfully completed the maze. [4] When the crabs were returned to the maze **16** too weak later, **17** you completed the maze in less than eight minutes. [5] To determine the significance of this finding, scientists introduced a second, untrained group of crabs to the maze. [6] Many of the crabs in the second group did not complete the maze, and those that did took much longer to do so than the crabs from the first group did. **18**

15

- A) NO CHANGE
- B) crabs, perchance,
- C) crabs, perhaps,
- D) crabs, possibly,

16

- A) NO CHANGE
- B) two weeks
- C) too weeks
- D) two weak

17

- A) NO CHANGE
- B) they
- C) he or she
- D) it

18

To make this paragraph most logical, sentence 1 should be placed

- A) where it is now.
- B) after sentence 2.
- C) after sentence 3.
- D) after sentence 5.

The difference in performance between the two groups of crabs led the team to conclude that the first group of crabs remembered the topography of the maze. Pope **19** desperately wishes to conduct further research into the way shore crabs navigate in ocean conditions created by climate change. **20** Despite this, the research done by Pope and his team demonstrates that shore crabs have complex spatial learning abilities.

19

- A) NO CHANGE
- B) dreams with hope that there will be
- C) has his heart set on conducting
- D) would like to conduct

20

- A) NO CHANGE
- B) As the research done by Pope and his team demonstrates,
- C) As an indication of the research done by Pope and his team,
- D) Due to the research done by Pope and his team,

CONTINUE 

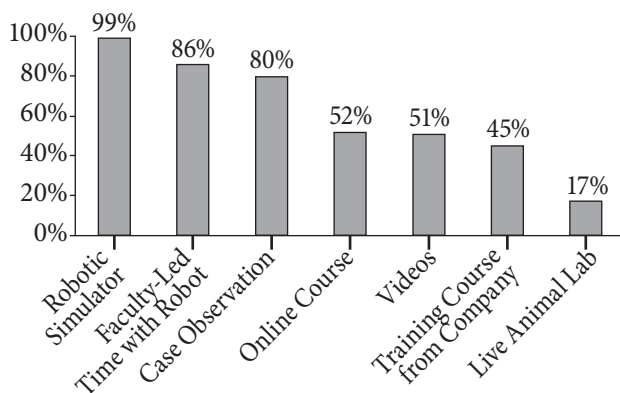
Questions 21-30 are based on the following passage and supplementary material.

Modern Medicine

Robotic surgery, also known as robot-assisted surgery, is a medical technology in which an advanced robot with arms and small instruments is controlled by a surgeon. This allows the doctor to perform **21** puzzling procedures without having to make significant incisions on **22** patients' bodies. The first surgical robot was created in 1985, but the uses for surgical robots were initially limited. In 2000, the Food and Drug Administration approved the da Vinci system for general laparoscopic surgery. Now, surgical robots have changed the medical **23** industry. They allow doctors to make precise cuts, even from afar.

In the past, a surgeon would have had to make a long cut for most operations. This can result in more blood loss and longer recovery times for patients. With a surgical robot, after he or she makes a tiny cut, a physician **24** have been able to use a camera to see inside the patient. Then, the doctor can use the controls to conduct the surgery with the robot's miniature tools. Since this technology is fairly new, a study was completed in 2018 to determine how doctors are trained to use surgical robots before operating on patients. Of the 71 programs that were surveyed, 99 percent used a robotic simulator, and **25** medical programs used robots in 86 percent of their classes.

Responses of 71 Medical Programs on How They Train Doctors in Robotic Surgery



21

- A) NO CHANGE
- B) twisted
- C) mysterious
- D) complex

22

- A) NO CHANGE
- B) patients body's
- C) patients bodies'
- D) patient's bodies

23

Which choice most effectively combines the sentences at the underlined portion?

- A) industry, though they allow
- B) industry, which allows
- C) industry by allowing
- D) industry that allows

24

- A) NO CHANGE
- B) was
- C) is
- D) were

25

Which choice most accurately represents the data in the chart?

- A) NO CHANGE
- B) 86 percent used faculty-led time with a robot.
- C) students spent 86 percent of their time using the robots.
- D) another 86 percent trained students through observational experience.

CONTINUE

Furthermore, **26** 51 percent of programs used videos as part of their training.

Aside from helping surgeons to make more precise movements, robotic surgery can also allow physicians to conduct surgeries remotely. For example, although an isolated or impoverished region might not have **27** access to an effective local surgeon, if a surgical robot were available it could actually be controlled by a doctor working in another city or even another country. A 2017 study by Dr. Ryan Madder, published in *EuroIntervention*, showed a 95 percent overall success rate for such surgeries. **28** Surprisingly, the study showed that no patients died or had to have procedures repeated before being discharged from the hospital.

Surgical robots can help doctors to make precise movements in complex procedures. **29** For this reason, they also allow doctors to operate on patients from a distance, which saves on travel time and costs. Since patients sometimes need a surgery right away, surgical robotics is a field **30** while connecting people with life-saving technology.

26

Which choice most accurately and precisely provides specific data from the chart?

- A) NO CHANGE
- B) 51 programs
- C) some of the participants
- D) additional programs surveyed

27

- A) NO CHANGE
- B) access, to an effective local surgeon,
- C) access to an effective local surgeon
- D) access, to an effective local surgeon

28

- A) NO CHANGE
- B) The study, though,
- C) As previously stated, the study
- D) The study additionally

29

- A) NO CHANGE
- B) Conversely,
- C) As another benefit,
- D) Thus,

30

- A) NO CHANGE
- B) connected by
- C) connecting with
- D) that can connect

CONTINUE 

Questions 31-40 are based on the following passage.

Queen Bess

The crowd was **31** gathering, on, September 3, 1922, as Bessie Coleman looked up to see a clear sky, ideal conditions for her air show. She was relieved that the sky was cloudless, and the temperature was mild; the show had already been postponed because of to bad weather. The crowd continued to grow at Curtiss Field in Long Island, NY for Bessie's first American airshow. She took a deep breath as she prepared to fly. The journey to this moment had been long.

Years prior, Bessie had fallen in love with flying while watching newsreels about World War I. **32** At this point of war, technological advancements, especially in aviation, increased, and many images of the war featured pilots and fighter planes. Inspired by these aviators, Bessie applied to many American flight schools but was rejected by each one because of her race and gender. For aspiring aviators, if they were white, they studied in the United States, but if they were black and female, like Bessie, **33** you had to look abroad to find training.

Bessie planned to attend a flight school in France, a more progressive nation than the United States in the early twentieth century. She worked hard, saved money, and learned French. In November 1920, she moved to France and enrolled in the Caudron Brothers' School of Aviation, where she met Gaston and Rene Caudron. These were the **34** instructors, who would train Bessie, in the skills and techniques of aviation. Bessie knew that aviation training was dangerous. **35** She persisted, and on June 15, 1921, she earned her pilot's license.

31

- A) NO CHANGE
- B) gathering: on
- C) gathering on
- D) gathering, on

32

- A) NO CHANGE
- B) At this time
- C) During this time
- D) For this period

33

- A) NO CHANGE
- B) she
- C) he or she
- D) they

34

- A) NO CHANGE
- B) instructors who would train Bessie
- C) instructors who would train Bessie,
- D) instructors, who would train Bessie

35

- Which choice, if added here, would most effectively explain why Bessie might be cautious?
- A) She knew that her training would take more than six months.
 - B) Even now, flying can be risky for pilots.
 - C) She had often imagined being in the pilot's seat.
 - D) She had seen a fellow classmate die in a crash.

[1] When Bessie returned to the United States, she was disappointed by the lack of career opportunities. [2] Once again she was unable to find an instructor in any American school, so she headed back to Europe. [3] Rather than continue her career search, she decided to pursue advanced aviation training. [4] She studied in France, the Netherlands, and Germany to master a range of aerial tricks and stunts. [5] In August 1922, she came back to New York, ready to perform. **36**

At Curtiss Field, Bessie took to the sky and performed daring stunts: barrel rolls, loops, figure eights, and low dives. **37** The crowd cheered loudly **38** because they loved her performance. When she landed, the show may

36

To make this paragraph most logical, sentence 2 should be placed

- A) where it is now.
- B) after sentence 3.
- C) after sentence 4.
- D) after sentence 5.

37

At this point, the writer is considering adding the following sentence.

After World War II, safety concerns about stunt flying curtailed its popularity, so today it is difficult to find a performance that features these particular tricks.

Should the writer make this addition here?

- A) Yes, because it adds a detail about the current time to make the passage more relevant to the reader.
- B) Yes, because it supports the paragraph's point about the difficulty of the stunts.
- C) No, because it is irrelevant to the passage's focus on how Coleman became an aviator.
- D) No, because it blurs the paragraph's focus on explaining airshows.

38

- A) NO CHANGE
- B) because they wanted to see her perform again.
- C) to show they enjoyed watching her.
- D) DELETE the underlined portion and end the sentence with a period.

CONTINUE

have been over, but her career was only beginning. After that successful debut, Bessie went on to tour the country, showcasing a range of aerial maneuvers and **39** electrifying audiences. **40**

39

- A) NO CHANGE
- B) pleasing
- C) occupying
- D) growing

40

The writer wants to conclude with a thought that emphasizes the idea of Bessie Coleman as a significant aviator. Which sentence, if added here, would best accomplish this goal?

- A) “Queen Bess” continues to be an inspiration for those who want to fly.
- B) Bessie Coleman would always remember that first airshow at Curtiss Field.
- C) Bessie Coleman always knew that stunt flying would start her career.
- D) Though it wasn’t her initial goal, Bessie Coleman’s decision to return to Europe was the correct one.

STOP

**If you finish before time is called, you may check your work on this section only.
Do not turn to any other section.**



Math Test – No Calculator

20 MINUTES, 13 QUESTIONS

Turn to Section 3 of your answer sheet to answer the questions in this section.

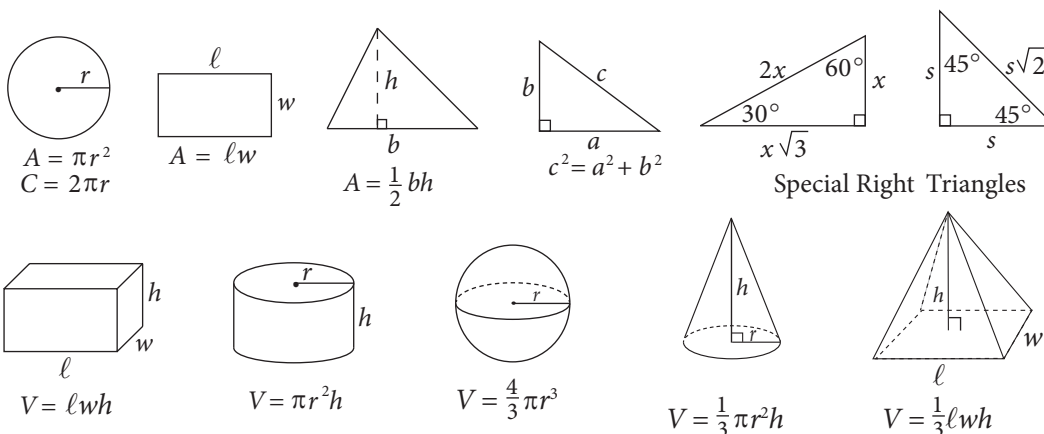
DIRECTIONS

For questions 1–10, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. For questions 11–13, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 11 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

NOTES

1. The use of a calculator **is not permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE



The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is 2π .

The sum of the measures in degrees of the angles of a triangle is 180.

CONTINUE



1

A secondhand sports store sells two types of softball equipment: gloves for \$20 each and bats for \$50 each. On a particular day, the store sold 52 pieces of softball equipment for a total of \$1,700. Which system of equations represents the relationship between the number of gloves, g , and the number of bats, b , sold on this day?

- A) $\begin{cases} g + b = 1,700 \\ 20g + 50b = 52(1,700) \end{cases}$
- B) $\begin{cases} g + b = 52 \\ 20g + 50b = (1,700) \end{cases}$
- C) $\begin{cases} g + b = 52 \\ 20g + 50b = 52(1,700) \end{cases}$
- D) $\begin{cases} 20g = 50b \\ 52g + 52b = (1,700) \end{cases}$

2

What is the value of a in the equation $\frac{8}{a} = \frac{2}{12}$?

- A) 16
- B) 24
- C) 48
- D) 106

3

x	0	1	2	3	4
$f(x)$	2	-2	-6	-10	-14

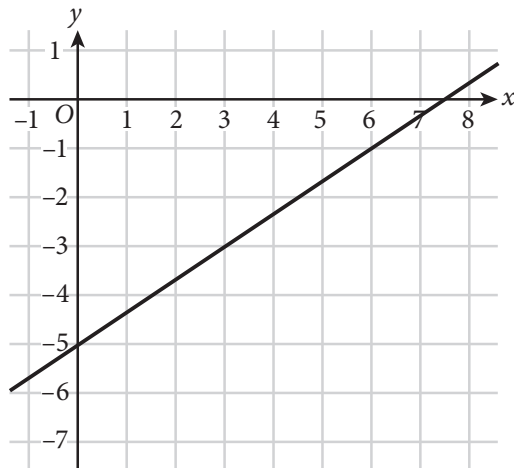
Some values of x and their corresponding $f(x)$ values are shown in the table above. Which of the following functions could represent the relationship between x and $f(x)$?

- A) $f(x) = 4x - 2$
- B) $f(x) = -2x + 2$
- C) $f(x) = -3x + 1$
- D) $f(x) = -4x + 2$

CONTINUE 



4



Which of the following equations is graphed on the xy -plane above?

- A) $y = \frac{2}{3}x - 5$
- B) $y = -\frac{2}{3}x + 5$
- C) $y = \frac{3}{2}x - 5$
- D) $y = -\frac{3}{2}x + 5$

5

$$-9(3t - 3v) + (9t - 13v)$$

Which of the following expressions is equivalent to the expression above?

- A) $-18t - 40v$
- B) $-18t + 14v$
- C) $36t + 14v$
- D) $36t - 40v$

6

Which of the following is equivalent to the expression $3c^2 - 10c + 8$?

- A) $(3c - 4)(c - 2)$
- B) $(3c + 4)(c - 2)$
- C) $(3c - 8)(c + 1)$
- D) $(3c + 8)(c + 1)$

7

If $(8m - 3) - (-2m + 6) = 0$, what is the value of m ?

- A) $m = 1.5$
- B) $m = 0.9$
- C) $m = 0.5$
- D) $m = 0.3$

CONTINUE



8

The formula for determining the angular speed, ω , of an object at an angular acceleration, α , is $\omega = \omega_0 + \alpha t$, where ω_0 is the initial angular speed and t is the time. Which formula represents α in terms of ω , ω_0 , and t ?

- A) $\alpha = \frac{\omega}{\omega_0} + t$
- B) $\alpha = \omega - \omega_0 - t$
- C) $\alpha = \omega - \omega_0 + t$
- D) $\alpha = \frac{\omega}{\omega_0} + t$

9

A company makes two different sizes of cylindrical paperweights with identical volumes. If the radius of Paperweight X is one-third the radius of Paperweight Y, then the height of Paperweight X is how many times the height of Paperweight Y?

- A) 9
- B) 3
- C) $\frac{1}{3}$
- D) $\frac{1}{9}$

10

Cost of Electricity

Electricity charge	Cost
Supply	6 cents per kilowatt hour
Delivery	3 cents per kilowatt hour

Mark's electric bill breakdown is shown in the table above. In addition to his electric bill, Mark's only other apartment expense is \$950 a month for rent. The expression $C = (0.06 + 0.03)h + 950$ shows the cost C , in dollars, of living in the apartment for a month as a function of h , the number of kilowatt hours of electricity used in a month. What does the y -intercept of the graph of this equation represent?

- A) The cost of electricity supply and delivery per kilowatt hour
- B) The cost of electricity supply and rent for a month
- C) The cost of rent for a month
- D) The cost of rent and electricity per kilowatt hour

CONTINUE 



DIRECTIONS

For questions 11–13, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

- Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately. You will receive credit only if the circles are filled in correctly.
- Mark no more than one circle in any column.
- No question has a negative answer.
- Some problems may have more than one correct answer. In such cases, grid only one answer.

- Mixed numbers** such as $3\frac{1}{2}$ must be gridded

as 3.5 or 7/2. (If

3	1	/	2
---	---	---	---

 is entered into

the grid, it will be interpreted as $\frac{31}{2}$, not as

$3\frac{1}{2}$.)

- Decimal Answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.

Answer: $\frac{7}{12}$

Write answer in boxes. →

7	/	1	2
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Grid in result. →

← Fraction line

Answer: 2.5

	2	.	5
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

← Decimal point

Acceptable ways to grid $\frac{2}{3}$ are:

	2	/	3
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

.	6	6	6
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

.	6	6	7
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Answer: 201 – either position is correct

	2	0	1
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

2	0	1	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

NOTE: You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.



11

$$-8x + 3y = 20$$

$$-4x - 2y = 3$$

The ordered pair (x, y) is a solution to the system of equations above. What is the value of y ?

12

$$y = -3x^2 + x + \frac{1}{2}$$

What is the value of the y -intercept of the equation above when it is graphed in the xy -plane?

13

A class with 9 students went to a local museum. Each student bought a general admission ticket for \$10. Each special exhibit ticket at the museum costs the same price, and 2 students bought 4 special exhibit tickets each, while 7 students bought 3 special exhibit tickets each. The total cost for the general admission tickets and special exhibit tickets was \$177.00. What was the cost, in dollars, of each special exhibit ticket? (Note: Disregard the \$ sign when gridding your answer.)

STOP

**If you finish before time is called, you may check your work on this section only.
Do not turn to any other section.**



Math Test – Calculator

40 MINUTES, 25 QUESTIONS

Turn to Section 4 of your answer sheet to answer the questions in this section.

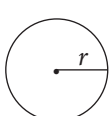
DIRECTIONS

For questions 1–21, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. For questions 22–25, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 22 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

NOTES

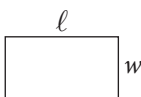
1. The use of a calculator **is permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE

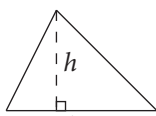


$$A = \pi r^2$$

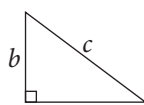
$$C = 2\pi r$$



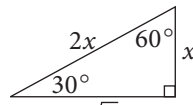
$$A = \ell w$$



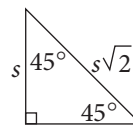
$$A = \frac{1}{2}bh$$



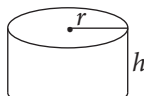
$$c^2 = a^2 + b^2$$



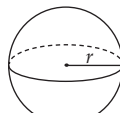
Special Right Triangles



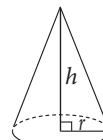
$$V = \ell wh$$



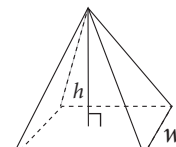
$$V = \pi r^2 h$$



$$V = \frac{4}{3}\pi r^3$$



$$V = \frac{1}{3}\pi r^2 h$$



$$V = \frac{1}{3}\ell wh$$

The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is 2π .

The sum of the measures in degrees of the angles of a triangle is 180.

CONTINUE



1

An office supply store sells boxes of paperclips. Each box contains at least 300 but no more than 400 paperclips. Which of the following could be the total number of paperclips in 5 boxes?

- A) 850
- B) 1,250
- C) 1,650
- D) 2,050

2

A company conducted a survey in which it asked 500 of its employees whether they were satisfied with their current work schedule. The table below shows the responses from all 500 employees that completed the survey.

	Part-time	Full-time
Satisfied with schedule	126	119
Dissatisfied with schedule	108	?

How many of the full-time employees reported that they were dissatisfied with their work schedules?

- A) 147
- B) 174
- C) 246
- D) 354

3

A teacher uses 2 dry erase markers for every student in his class each year. He also needs 1 red pen for every 5 students. If he determines that he will need 7 red pens for the upcoming school year, which of the following could be the number of dry erase markers that he expects to use?

- A) 50
- B) 60
- C) 70
- D) 80

4

The table below shows the maximum and minimum elevations in five counties in Missouri.

Elevation (in meters)					
	Clark	Cooper	Putnam	Scotland	St. Charles
Maximum elevation	239	289	329	240	195
Minimum elevation	132	153	196	119	122

What is the mean maximum elevation, in meters, of the five counties shown?

- A) 201
- B) 201.4
- C) 258
- D) 258.4

CONTINUE



5

A random sample of 200 widgets was tested from the 5,913 widgets produced by a factory one day. If 41 of the widgets were defective, approximately how many widgets produced in the factory that day would be expected to be defective?

- A) 1,200
- B) 2,200
- C) 3,000
- D) 4,700

6

A city adds a 5% hotel tax to the advertised nightly rate for all hotels booked in the city. If the advertised nightly rate for a certain hotel is \$117.50, approximately how much hotel tax will be added to the bill?

- A) \$5.00
- B) \$6.00
- C) \$7.00
- D) \$8.00

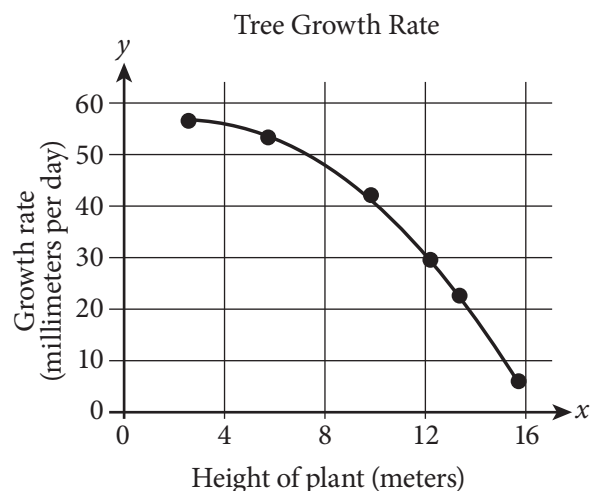
7

A teacher asks his students to estimate the weight of the snow on their porches after a light snowfall given the weight of snow per cubic meter. One student's porch is a rectangle measuring 305 centimeters by 425 centimeters and is covered by an even layer of snow 5 millimeters thick. What are the dimensions of the layer of snow (width by length by thickness) in meters? (Note: 1 centimeter = 10 millimeters and 1 meter = 100 centimeters)

- A) 3,050 meters by 4,250 meters by 50 meters
- B) 3,050 meters by 4,250 meters by 5,000 meters
- C) 3.05 meters by 4.25 meters by $\frac{1}{100}$ meters
- D) 3.05 meters by 4.25 meters by $\frac{1}{200}$ meters

8

A scientist at a greenhouse studied the relationship between the growth rate of a particular tree species and its current height. The conditions in the greenhouse were kept constant throughout the study period. The results are shown below, along with the graph of the exponential function that best models the data.



According to the model, which of the following is the best estimate of the plant's growth rate, in millimeters per day, when the plant was 11 meters tall?

- A) 14
- B) 15
- C) 30
- D) 36

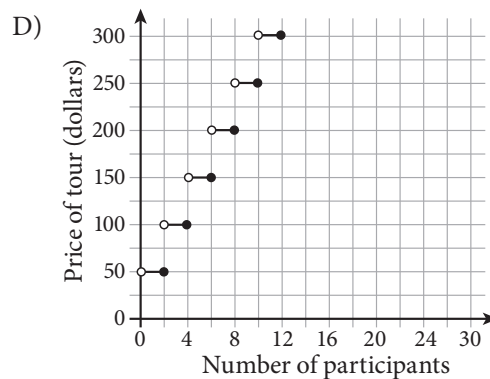
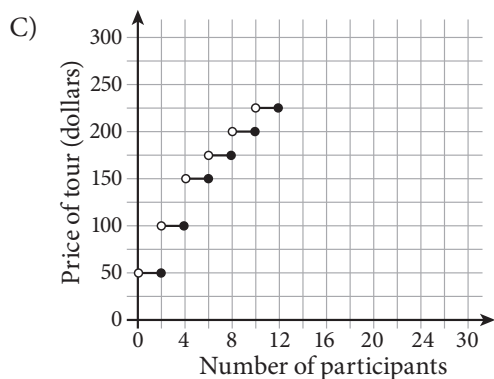
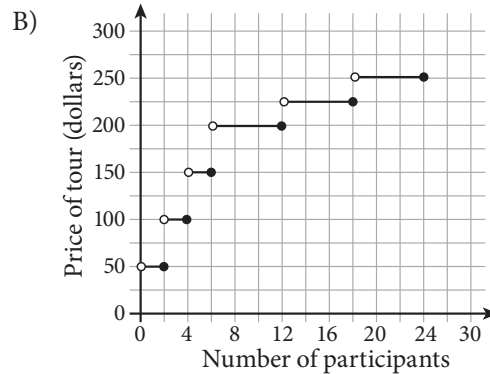
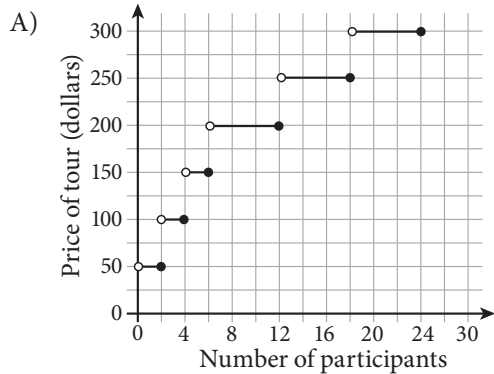


The rates to book a private tour with a company are shown below.

Private Tour Rates
(maximum of 24 participants)

Price of tour (\$)	Number of participants
50	up to 2
100	more than 2 and no more than 4
150	more than 4 and no more than 6
200	more than 6 and no more than 12
225	more than 12 and no more than 18
250	more than 18 and no more than 24

Which graph best represents the relationship between the number of participants and the total charge of the tour, in dollars?



CONTINUE



10

A bakery's specialty flour is a mixture of almond and coconut flour. The ratio of almond flour to coconut flour is 7:38 by volume. If a bakery uses 180 cups of the flour mixture in a day, what is the volume, in cups, of the almond flour used?

- A) 28
- B) 68
- C) 126
- D) 152

11

The equations below show the total number of cars, t , that have passed through two intersections after d hours of daylight.

$$\text{Intersection X: } t = 450d$$

$$\text{Intersection Y: } t = 150d$$

Which of the following statements is an accurate comparison based on the equations?

- A) The number of cars that passed through Intersection X per hour increased at a faster rate than the number of cars that passed through Intersection Y per hour.
- B) For each hour of daylight, the number of cars that passed through Intersection X is three times the number that passed through Intersection Y.
- C) The number of cars that passed through Intersection Y per hour increased at a faster rate than the number of cars that passed through Intersection X per hour.
- D) For each hour of daylight, the number of cars that passed through Intersection Y is three times the number that passed through Intersection X.

Questions 12–14 refer to the following information.

Maria plans to purchase a new cell phone for her existing data plan. The cell phone will have a 6.5% sales tax on the purchase price, plus a flat fee of \$20 for the phone charger. She has already used 2 Gigabytes of data this month, and her limit is 7 Gigabytes. Maria uses data for 2 hours each day and uses 0.25 Gigabytes for each of those hours. She will use the equation $p = \frac{m}{n}$, where m is the number of minutes of power and n is the number of kilowatt-hours of electricity, to determine her charge efficiency, p .

12

Which of the following formulas can Maria use to determine the number of kilowatt-hours of electricity she needs to power her cell phone for a certain number of minutes?

- A) $n = pm$
- B) $n = \frac{m}{p}$
- C) $n = \frac{p}{m}$
- D) $n = p + m$

13

Maria can use which of the following inequalities to model the number of days, d , she can use her phone before she hits or goes over her limit of 7 Gigabytes?

- A) $2d + 0.5 \leq 7$
- B) $2 + 0.5d \leq 7$
- C) $2 \leq 0.5d + 7$
- D) $2 \leq 0.5 + 7d$

CONTINUE



14

Including the flat fee for the phone charger and the sales tax, Maria will need to pay a total of \$685.72 for the cell phone. How much is the purchase price of the cell phone, to the nearest dollar?

- A) \$750
- B) \$659
- C) \$625
- D) \$622

16

The following data represents the shoulder heights in meters (m) of 7 elephants that live in a local zoo.

Elephant	Shoulder Height (m)
A	2.04
B	1.83
C	2.13
D	3.14
E	2.45
F	2.68
G	1.90
H	?

An additional elephant is added to the zoo, and its shoulder height is measured. Its shoulder height increases the median value of the group of elephants but decreases the mean value of the group. What is a possible measurement for the shoulder height of the 8th elephant?

- A) 1.98 m
- B) 2.13 m
- C) 2.24 m
- D) 2.31 m

15

A new video game is being tested by a focus group. A group of researchers randomly selected people to evaluate, on a check system, the game they just played. The results of the evaluation are shown in the table below.

Video Game Evaluations

Rating	# of People
✓−	14
✓	29
✓+	13
✓++	18

A total of 240 people played the video game. Based on the results of the evaluations, about how many people who played the video would have evaluated it as a ✓+ or higher?

- A) 197
- B) 100
- C) 42
- D) 31

CONTINUE



Questions 17–18 refer to the following information.

Scientists say the ability to run fast helps animals outrun predators and catch prey. The table below shows the distance, in kilometers, covered in 10 minutes (min) of running for several mammals from Africa.

Average Speeds of African Mammals

Animal	Distance covered in 10 min of running
African wild dog	12 km
Cheetah	18 km
Elephant	7 km
Giraffe	9 km
Lion	14 km
Zebra	11 km

17

In a stampede, a lion ran for 20 min, a cheetah ran for 10 min, an African wild dog ran for 10 min, and a zebra ran for 40 min. What is the total distance, in meters, that was covered by the animals?

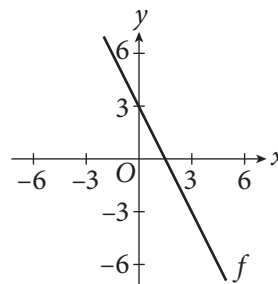
- A) 80 m
- B) 102 m
- C) 80,000 m
- D) 102,000 m

18

Which of the following mammals covers a distance closest to the combined distance covered by a cheetah running for 15 min and a giraffe running for 5 min?

- A) Zebra running for 30 minutes
- B) African wild dog running for 20 minutes
- C) Lion running for 50 minutes
- D) Elephant running for 60 minutes

19



The xy -plane above shows line f . For constants r and s , the equation $y = rx + s$ represents line f . Which of the following sets of inequalities is true about r and s ?

- A) $\begin{cases} 0 < r < 3 \\ s < 4 \end{cases}$
- B) $\begin{cases} r > 0 \\ s > 2 \end{cases}$
- C) $\begin{cases} r < 0 \\ s < 1 \end{cases}$
- D) $\begin{cases} -3 < r < 0 \\ s > -1 \end{cases}$

CONTINUE



20

Ms. Burke is growing tomatoes on a vine. She plants a starter plant with a height of 6 inches and estimates the height of the vine after each day for 6 days, as shown in the table below.

Height of Vine after Each Day of Growth

Day (x)	Height of Vine (y)
1	7.5 in
2	9.0 in
3	10.5 in
4	12.0 in
5	13.5 in
6	15.0 in

If the line passing through the points defined in the table is graphed on an xy -plane, which of the following is the best interpretation of the slope in the context of the problem?

- A) The amount that the height of the vine is increasing each day
- B) The height of the vine after the seventh day of growth
- C) The height of the vine when it was first planted
- D) The number of days for which the height of the tomato plant will increase

21

A teacher estimates that 1.5% of the district's students have red hair. Which of the following is the closest to the total number of students with red hair if there are approximately 350 students per school in the 9 different schools in the district?

- A) 4,725
- B) 525
- C) 47
- D) 5

CONTINUE



DIRECTIONS

For questions 22–25, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

- Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately. You will receive credit only if the circles are filled in correctly.
- Mark no more than one circle in any column.
- No question has a negative answer.
- Some problems may have more than one correct answer. In such cases, grid only one answer.

- Mixed numbers** such as $3\frac{1}{2}$ must be gridded

as 3.5 or 7/2. (If

3	1	/	2
---	---	---	---

 is entered into

the grid, it will be interpreted as $\frac{31}{2}$, not as

$3\frac{1}{2}$.)

- Decimal Answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.

Answer: $\frac{7}{12}$

Write answer in boxes. →

7	/	1	2
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Grid in result. →

← Fraction line

Answer: 2.5

	2	.	5
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

← Decimal point

Acceptable ways to grid $\frac{2}{3}$ are:

	2	/	3
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

.	6	6	6
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

.	6	6	7
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Answer: 201 – either position is correct

	2	0	1
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

2	0	1	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

NOTE: You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.



22

A cafe sells drink vouchers for a private event. A voucher for one drink costs \$6 and a voucher for two drinks costs \$10. A total of 89 drinks were purchased with vouchers, and the voucher sales total was \$462. What is the total number of vouchers that were sold?

23

$$-3a + 6b = 1.8$$

$$4a - 3b = 1.1$$

The ordered pair (a, b) is a solution to the system of equations above. What is the value of b ?

CONTINUE 



Questions 24–25 refer to the following information.

A restaurant surveyed its customers to determine which beverage was most popular with breakfast. Participants were required to choose either coffee or tea. The partially completed table below shows the breakdown by age of a sample of 116 people who responded to a survey on their drink preferences.

Breakdown of Customers' Drink Preferences

		Age range in years				Total
		18–29	30–44	45–64	65+	
Drink preference	Coffee		21		4	
	Tea	17		12		
	Total		55		14	116

24

Among all the people represented in the survey, 25.6% of the people who chose coffee as their preferred beverage were 45–64 years old. What is the total number of people ages 18–29 who voted for either coffee or tea in the survey?

25

What is the total number of people from the sample who chose coffee as their preferred beverage?

STOP

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section.

PSAT 8/9 PRACTICE ANSWER SHEET

COMPLETE MARK ●

EXAMPLES OF
INCOMPLETE MARKS



It is recommended that you use a No. 2 pencil. It is very important that you fill in the entire circle darkly and completely. If you change your response, erase as completely as possible. Incomplete marks or erasures may affect your score.

TEST NUMBER

SECTION 1

ENTER TEST
NUMBER

For instance, for
Practice Test #1, fill in
the circle for 0 in the
first column and for 1
in the second column.

--	--

- | | | |
|---|-----------------------|-----------------------|
| 0 | <input type="radio"/> | <input type="radio"/> |
| 1 | <input type="radio"/> | <input type="radio"/> |
| 2 | <input type="radio"/> | <input type="radio"/> |
| 3 | <input type="radio"/> | <input type="radio"/> |
| 4 | <input type="radio"/> | <input type="radio"/> |
| 5 | <input type="radio"/> | <input type="radio"/> |
| 6 | <input type="radio"/> | <input type="radio"/> |
| 7 | <input type="radio"/> | <input type="radio"/> |
| 8 | <input type="radio"/> | <input type="radio"/> |
| 9 | <input type="radio"/> | <input type="radio"/> |

- | | | | |
|--|--|--|--|
| 1 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 12 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 23 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 34 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 2 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 13 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 24 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 35 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
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| 4 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 15 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 26 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 37 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 5 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 16 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 27 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 38 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 6 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 17 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 28 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 39 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 7 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 18 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 29 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 40 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 8 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 19 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 30 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 41 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
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| 10 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 21 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 32 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | |
| 11 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 22 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 33 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | |

PSAT 8/9 PRACTICE ANSWER SHEET

COMPLETE MARK ●

EXAMPLES OF
INCOMPLETE MARKS



It is recommended that you use a No. 2 pencil. It is very important that you fill in the entire circle darkly and completely. If you change your response, erase as completely as possible. Incomplete marks or erasures may affect your score.

SECTION 2

1 A B C D
○ ○ ○ ○

9 A B C D
○ ○ ○ ○

17 A B C D
○ ○ ○ ○

25 A B C D
○ ○ ○ ○

33 A B C D
○ ○ ○ ○

2 A B C D
○ ○ ○ ○

10 A B C D
○ ○ ○ ○

18 A B C D
○ ○ ○ ○

26 A B C D
○ ○ ○ ○

34 A B C D
○ ○ ○ ○

3 A B C D
○ ○ ○ ○

11 A B C D
○ ○ ○ ○

19 A B C D
○ ○ ○ ○

27 A B C D
○ ○ ○ ○

35 A B C D
○ ○ ○ ○

4 A B C D
○ ○ ○ ○

12 A B C D
○ ○ ○ ○

20 A B C D
○ ○ ○ ○

28 A B C D
○ ○ ○ ○

36 A B C D
○ ○ ○ ○

5 A B C D
○ ○ ○ ○

13 A B C D
○ ○ ○ ○

21 A B C D
○ ○ ○ ○

29 A B C D
○ ○ ○ ○

37 A B C D
○ ○ ○ ○

6 A B C D
○ ○ ○ ○

14 A B C D
○ ○ ○ ○

22 A B C D
○ ○ ○ ○

30 A B C D
○ ○ ○ ○

38 A B C D
○ ○ ○ ○

7 A B C D
○ ○ ○ ○

15 A B C D
○ ○ ○ ○

23 A B C D
○ ○ ○ ○

31 A B C D
○ ○ ○ ○

39 A B C D
○ ○ ○ ○

8 A B C D
○ ○ ○ ○

16 A B C D
○ ○ ○ ○

24 A B C D
○ ○ ○ ○

32 A B C D
○ ○ ○ ○

40 A B C D
○ ○ ○ ○

PSAT 8/9 PRACTICE ANSWER SHEET

COMPLETE MARK ●

EXAMPLES OF
INCOMPLETE MARKS



It is recommended that you use a No. 2 pencil. It is very important that you fill in the entire circle darkly and completely. If you change your response, erase as completely as possible. Incomplete marks or erasures may affect your score.

SECTION 3

1 A B C D
○ ○ ○ ○

2 A B C D
○ ○ ○ ○

3 A B C D
○ ○ ○ ○

4 A B C D
○ ○ ○ ○

5 A B C D
○ ○ ○ ○

6 A B C D
○ ○ ○ ○

7 A B C D
○ ○ ○ ○

8 A B C D
○ ○ ○ ○

9 A B C D
○ ○ ○ ○

10 A B C D
○ ○ ○ ○

11
| | | |
/ ○ ○

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12
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8 ○ ○ ○ ○

9 ○ ○ ○ ○

NO CALCULATOR
ALLOWED



PSAT 8/9 PRACTICE ANSWER SHEET

COMPLETE MARK ●

EXAMPLES OF
INCOMPLETE MARKS



It is recommended that you use a No. 2 pencil. It is very important that you fill in the entire circle darkly and completely. If you change your response, erase as completely as possible. Incomplete marks or erasures may affect your score.

SECTION 4

1 A B C D
○ ○ ○ ○

2 A B C D
○ ○ ○ ○

3 A B C D
○ ○ ○ ○

4 A B C D
○ ○ ○ ○

5 A B C D
○ ○ ○ ○

6 A B C D
○ ○ ○ ○

7 A B C D
○ ○ ○ ○

8 A B C D
○ ○ ○ ○

9 A B C D
○ ○ ○ ○

10 A B C D
○ ○ ○ ○

11 A B C D
○ ○ ○ ○

12 A B C D
○ ○ ○ ○

13 A B C D
○ ○ ○ ○

14 A B C D
○ ○ ○ ○

15 A B C D
○ ○ ○ ○

16 A B C D
○ ○ ○ ○

17 A B C D
○ ○ ○ ○

18 A B C D
○ ○ ○ ○

19 A B C D
○ ○ ○ ○

20 A B C D
○ ○ ○ ○

21 A B C D
○ ○ ○ ○

22
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23
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24
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CALCULATOR
ALLOWED

